

CLAIMS

What is claimed is:

1. An aortic catheter for cerebral and coronary embolic protection,
5 comprising:
an elongated catheter shaft having at least one perfusion lumen extending
therethrough;
a deployable aortic flow divider mounted to the catheter shaft; the aortic flow
divider having an upper surface and a lower surface; and
10 at least one flow-through orifice through the aortic flow divider from the upper
surface to the lower surface.
2. The aortic catheter of claim 1, wherein the aortic flow divider comprises
an inflatable member.
- 15 3. The aortic catheter of claim 2, wherein the catheter shaft comprises an
inflation lumen in fluid communication with the inflatable member.
4. The aortic catheter of claim 1, wherein the at least one flow-through
20 orifice comprises two flow-through orifices through an upstream end of the aortic flow
divider.

5. The aortic catheter of claim 4, wherein the flow-through orifices have a diameter of approximately 0.010 to 0.0250 inches.

6. The aortic catheter of claim 4, wherein the flow-through orifices have a diameter of approximately 0.050 to 0.0100 inches.

7. The aortic catheter of claim 1, wherein the catheter shaft comprises one perfusion lumen extending from a proximal end of the catheter shaft to at least one arch perfusion port and at least one corporeal perfusion port.

8. The aortic catheter of claim 7, wherein the at least one arch perfusion port discharges above the upper surface of the aortic flow divider and the at least one corporeal perfusion port discharges below the lower surface of the aortic flow divider.

9. The aortic catheter of claim 7, wherein the at least one arch perfusion port and the at least one corporeal perfusion port are configured to provide a fluid flow ratio in the range of approximately 1:2 to approximately 1:4.

10. The aortic catheter of claim 1, wherein the catheter shaft comprises an arch perfusion lumen extending from a proximal end of the catheter shaft to at least one arch perfusion port and a corporeal perfusion lumen extending from the proximal end of the catheter shaft to at least one corporeal perfusion port.

11. The aortic catheter of claim 10, wherein the at least one arch perfusion port discharges above the upper surface of the aortic flow divider and the at least one corporeal perfusion port discharges below the lower surface of the aortic flow divider.

5 12. The aortic catheter of claim 1, wherein the aortic flow divider is configured to partition the lumen of the aortic arch longitudinally into a first fluid flow channel in fluid communication with the aortic arch vessels and a second fluid flow channel in fluid communication with the patient's corporeal circulation.

10 13. The aortic catheter of claim 1, wherein the aortic flow divider is configured to divert emboli downstream to the patient's corporeal circulation.

14. The aortic catheter of claim 1, wherein the elongated shaft is sized and configured to be inserted directly into the aorta through an aortotomy incision.

15 15. The aortic catheter of claim 1, wherein the elongated shaft is sized and configured to be inserted into the aorta through a peripheral artery insertion site.

16. The aortic catheter of claim 1, wherein at least a portion of the elongated
20 shaft is reinforced with a wire coil.

17. A method of cerebral and coronary embolic protection comprising:

inserting an aortic flow divider into an operative position within a lumen of an aortic arch of a patient with an upper surface of the aortic flow divider facing toward the patient's superior aortic arch and a lower surface of the aortic flow divider facing toward the patient's inferior aortic arch;

perfusing the patient's aortic arch vessels through at least one arch perfusion port that discharges into the patient's superior aortic arch; and

directing a portion of the perfusate from the patient's superior aortic arch to the patient's inferior aortic arch through at least one flow-through orifice in the aortic flow divider.

18. The method of claim 17, wherein the aortic flow divider diverts emboli downstream to the patient's corporeal circulation.

19. The method of claim 17, further comprising:

partitioning the lumen of the aortic arch longitudinally into a first aortic flow channel in fluid communication with the aortic arch vessels and a second aortic flow channel in fluid communication with the patient's corporeal circulation.

20. The method of claim 17, wherein the aortic flow divider is inserted directly into the patient's aorta through an aortotomy incision in the aortic wall.

21. The method of claim 17, wherein the aortic flow divider is inserted into the aorta through a peripheral artery insertion site.

22. The method of claim 17, further comprising:
5 perfusing the patient's corporeal circulation through at least one corporeal perfusion port that discharges into the patient's inferior aortic arch.

23. The method of claim 22, wherein the patient's aortic arch vessels and the patient's corporeal circulation are perfused with a fluid flow ratio in the range of
10 approximately 1:2 to approximately 1:4.

24. The method of claim 22, wherein the patient's aortic arch vessels are perfused with a hypothermic perfusate and the patient's corporeal circulation is perfused
15 with a normothermic perfusate.